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监管保护下的审计业务量效应[1]

赵子夜[2]

摘要

在声誉和赔偿等机制的作用下，如果高业务量的审计方将因机会主义行为而损失更多，则会降低机会主义行为的概率，从而产生审计业务量效应。本文则试图为监管引致的审计业务量效应提供理论分析和经验证据。当监管方为保护投资者而集中取缔违规者的从业资格，不仅惩罚了已有的错失，还示范了审计业务量和机会主义成本的正相关性，即严重损害投资者利益的行为将导致所有的市场业务的丢失，从而激发审计方业务量和其后续机会主义概率的关联性。在此理论预期下，本文的检验结果表明，当"从业资格取缔"型监管事件发生，审计方的业务量越高，其客户公司的短期超额回报也更高，暗示当监管通过抑制未来的机会主义概率而对投资者形成保护时，激发了审计方的业务量和机会主义审计行为的关联度的信念，投资者根据审计业务量调整了对客户公司的价值预期。结论有助于我们理解监管的"惩前治后"的示范性质和其引发审计业务量效应的可能性。

关键词：审计业务量、监管保护、市场反应

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[2] 赵子夜：会计学博士，上海财经大学会计与财务研究院研究员，会计学院讲师。电子邮件地址zhao.ziye@mail.shufe.edu.cn。

一、引言

当信息不对称普遍存在，审计服务的相关方如何互动，市场又如何达到均衡，一直是各界所重点关注的问题。在一般的审计服务框架下，如果某变量会影响审计方的机会主义概率，那么该变量便可能和审计服务的质量相关，比如DeAngelo（1981）提出的审计准租金（aggregate quasi rents），以及Dye（1993）提出的赔偿机制下的口袋深度。当研究者们以审计方规模来刻画准租和口袋深度时，便发现审计方的业务规模和服务质量的各种指标相关，如客户公司的盈利反应系数、应计项目的公允性、债务融资成本以及IPO抑价的缓解程度等等（Balvers *et al.*, 1988; Eichenseher *et al.*, 1989; Teoh and Wong, 1993; Lenox, 1999; Francis *et al.*, 1999; Pittman and Fortin, 2004）。

本文关注于中国市场下审计业务量效应的形成机制，考察严厉的监管的经济后果，如对违规者实行"从业资格取缔"型的惩罚措施，是否通过示范机会主义的昂贵成本来保护投资者。检验结果表明，一旦机会主义行为的受罚损失和业务量相关联的信念被激发，市场将根据审计方的业务量来调整对机会主义概率的预期。

本文的贡献体现在下述方面。其一，为审计业务量效应的形成机制提供新的证据。如已有的文献所示，声誉和赔偿机制可以通过准租金来影响审计行为（DeAngelo, 1981; Dye, 1993）。那么，监管是否可能直接改变机会主义行为发生的概率，从而激发审计业务量的效应呢？显然，对这一问题的答案有利于各界考量审计市场的行为特征。其二，本研究有助于我们理解审计市场中的业务分布规律和质量特征。有关中国审计市场下服务质量的研究结论未达统一，而在已有的研究框架中纳入新的研究参数，比如业务集中的具体方式，或者细致化研究设计，比如关注于具体的审计事件，均有利于提升研究结论的信息含量（张奇峰，2005；周海平和吕长江，2007；Chan and Wu, 2009）。本文正是关注于一个具体的审计监管事件，将监管示范机会主义成本的功能纳入已有的审计研究框架，以拓展我们对审计行为的理解。其三，近期的系列研究证明了监管在新兴证券市场中的积极作用（Chen and Yuan, 2004; Pistor and Xu, 2005；陈冬华等，2008）。遵循这一逻辑，我们仍需更多的证据来具体化监管在中国审计市场中的积极效应，本研究有助于丰富这一领域的文献。

全文的安排如下，下一部分分析监管激发审计业务量效应的机理，首先梳理出一个审计业务量效应的一般性框架，然后将资格取缔型监管置于这一框架进行具体分析。随后，本文从模型构建、样本选择和数据来源等方面介绍研究方法。在研究方法的后续部分，论文将系统的展示统计结果，包含主要模型的测试结果和进一步的测试结果。最后，研究结论被安排在文末。

二、监管激发的审计业务量效应

本文所指的审计业务量效应，是指在特定的机制的激发下，审计方的业务规模在审计决策中产生实质性的作用。从审计方的角度而言，主要指其在决定服务质量时会考虑已有的业务规模，比如权衡降低独立性的损失。而从被审计方的角度而言，则主要指其在选择审计方时，将审计方业务规模作为服务质量的参考依据。审计业务量效应揭示了鉴证服务的签约规则，故而对审计实务具有重要的参考价值。

（一）审计业务量效应的一般性激发框架

从审计质量的定义出发，DeAngelo (1981) 指出了两个决定性的因素，一是识错能力即专业性，二是报错概率即独立性。依独立性或者专业性进行路径深入，所侦测到的变量都可能和服务质量相关。如果以专业性为切入点，由于财务报告中刻意的错误和无意的疏失均需被识别，故鉴证服务将得益于审计方使用会计信息来刻画经济实质的能力。从而，审计方为掌握客户专有业务信息的投入，以及对投资者的信息需求特征的把握能力都可能和服务质量相关。而以决定机会主义概率的独立性为例，当审计服务的过程中存在不同程度的信息不对称问题，审计独立性将得益于有效的激励或者约束，故此，研究者可细分具体的约束及激励机制来寻求审计质量的决定因素。这当中，有两个重要的理论值得关注。其一，DeAngelo (1981) 的准租理论认为，一旦审计失败，高声誉且享有“客户专用性”租金的高业务型审计方将损失更多，所以更愿意出具高质量的审计报告。其二，Dye (1993) 则认为，在诉讼风险下，拥有更多财富的审计方的赔偿预期较高（口袋深度），同样更愿意出具高质量的审计报告。这说明，在声誉和赔偿机制的共同作用下，审计方规模和服务质量的关联性被激发。遵循这一逻辑，所谓审计业务量效应的一般性激发框架，是指当某种机制通过持续的影响力，对审计方形成和某种有规则的约束（或者激励），其力度和审计方的业务量正相关，那么以机会主义概率为中间变量，该影响力便会激发审计方业务规模和服务质量的关联性，最终使得审计双方在决策时均会考虑业务量。

（二）“资格取缔”型监管的机会主义成本示范效应

在审计市场中，除了声誉和赔偿机制能够对审计方产生约束力，监管同样值得关注。具体到中国的制度背景下，监管的相对重要性更加明显。在声誉机制方面，新兴市场下重复交易引发声誉机制的系统正逐渐起步，审计服务的数量、规模和复杂性相对于成熟市场要低，这意味着审计双方就声誉机制的运作尚处于经验积累的阶段。在诉讼赔偿方面，中国的投资者法律保护系统刚经历了一个渐进的构造过程，比如在旨在保护中小投资者的立法层面（沈艺峰等，2004）。而具体到审计诉讼和赔偿系统的执行层面，诸如诉讼成本和执法经验等支撑性的要素仍需一个逐渐完善的发展期间。反之，在监管方面，有较为丰富的文献证明其在新兴市场的发展

过程中起到了积极的作用(Chen and Yuan, 2004; Pistor and Xu, 2005；陈冬华等，2008)，暗示监管系统的相对成熟。

监管的特点是其本身对审计方产生了巨大的约束，以及对后续机会主义行为进行抑制，这是激发业务量效应的有利条件。此外，和准租或者赔偿效应不同的是，监管将通过惩戒后果向审计方示范机会主义的成本，从而激发业务量效应。当然，这一过程需要两个严格的条件支撑，一是必须有充足的信息来展示受管者的损失和业务量直接相关，二是这种相关性的监管措施具有持久性，从而能够显著的改变审计方的预期。从审计方的角度重新诠释前述示范效应，则是行为人可以观察到监管措施的具体信息(如介入机构、审查模式、惩罚方式和力度等)，从而得以对未来的机会主义行为的成本进行预估，并将预估的结果纳入后续的审计决策中去。由此可见，监管的作用，既包括"惩前"，还纳入"治后"。

就中国审计市场的监管事件而言，2002年初的"从业资格取缔"事件值得关注。从表现形式来看，本次事件由行业协会经过证券从业资格的年度检查，向财政部和中国证券监督管理委员会请示并获准取缔了中天勤、华伦、深圳华鹏、深圳同人和中联信共计5家会计师事务所的从业资格，也就是监管方协同并审慎的完成了大规模的"资格取缔型"惩戒措施。[3]监管的目的是为保障审计市场的健康发展，提升行业的规范程度。从因果关系来看，2001年市场发生的审计失败事件也是该监管事件的部分原因，比如银广夏事件中的审计方中天勤会计师事务所，就在本次被取缔的范围中。从审计研究的视角来看，该事件包含了激发审计业务量效应的各种必备条件。其一，惩戒的原因是严重执业质量问题、职业违规、涉嫌舞弊和从业条件不达标等，说明监管的目的包含了打击机会主义行为，从而会影响审计方的后续行为的规范性，以保护审计服务的客户。其二，在该事件中，监管方取缔了5家审计方的从业资格，如果按照最近一个财务报告审计年度的客户数量排名，这5家审计方有2家进入前10，两家处于10到20，最后一家处在20到40，可见业务量相对分散，这对其余审计方提供了足够清晰的信息：当监管条件达成，机会主义成本等同于所有的证券从业业务量！当然，这里的触发型监管条件难以具体为各项数值型指标，但从公开信息来看，监管方可以根据规章制度提供的指导，合理行使惩戒裁量权(Discretionary)来相机的选择处罚方式。比如，以中小投资者是否遭致重大损失作为是否取缔资格的判断因素。其三，根据财会[2001]1069号"关于印发《注册会计师、会计师事务所证券期货相关业务许可证年检办法》的通知"，在达成一定条件的情况下，审计方的从业资格将被取缔，这为资格取缔型监管提供了规章基础。而至2002年初具体事件的发生，可谓在规章基础上补充了执行力这一核心的条件，使得

[3] 详见中国注册会计师协会《关于2000–2001年度证券许可证年检情况有关处理意见的请示》和财政部《关于2000–2001年度证券许可证年检情况有关处理意见的批复》(财会[2002]1031 号)等文件和相关媒体报道。

示范效应能够显著的体现。此外，资格取缔的载体是每年一度的从业资格审查，这意味着“从业资格”取缔是第一次但未必是最后一次，从而能够保证持久性以产生良好的示范效应。

综上所述，虽然部分受罚审计方的机会主义行为在事前已被揭露，市场也以对其所受的处理有所预期，但“资格取缔”事件因满足了特殊的条件集群，仍然产生了一个信息冲击，从而提供了一个研究契机，以供考察监管激发的审计业务量效应。这一条件集群包括，首先，监管能在已有的规章基础上提供执行力到位的保障信息，确保对后续的机会主义进行抑制；其次，监管具有持久的警示效应，通过以年度检查报告的方式披露，证明每年均可能发生惩戒舞弊者的行为；最后，本次事件处罚的对象能形成最低的规模标准(集中取缔数家审计方)，同时区分出示范的受众(通过年检的审计方)，进而传递充分的信息。至于事件引起的经济后果，当监管向审计方示范了机会主义的成本，具有业务量优势的审计方将在未来因机会主义而损失更多，从而降低机会主义行为的概率(比如保持足够的审计独立性和投入足够的专业技能)。进而，投资者会提升对审计鉴证的信心，享受诸如代理成本下降等好处，根据审计方的业务量调整对客户公司价值的预期。从命题检验的角度出发，“资格取缔”型监管事件的经济后果包含了监管的示范效应，即审计方的业务量越高，客户公司越可能产生更高的超额回报。

三、研究方法

(一)研究机理和模型

在监管的示范效应下，审计方的机会主义成本和业务量相关联，本文拟从市场感知的角度为这种关联性提供证据。在信息不对称的状态下，审计鉴证有助于降低代理成本，从而有利于公司的市场价值。“资格取缔”型监管事件向市场传递了一个“机会主义成本和业务量相关”的信息冲击，当市场对这一冲击作出反应时，投资者便会根据审计方的业务量来调整其对客户公司的价值的预期。这其中，公司的超额回报可用于刻画市场感知的业务量效应，其和审计业务量是否在统计上相关，将有助于我们判定需检验的命题。测试模型见下：

$$CAR_{[-5,5]} = \alpha + \beta_1 ABS + \beta_2 SP + \beta_3 OP + \beta_4 LOSS + \beta_5 CURA + \beta_6 OCF + \beta_7 HER5 + \beta_8 LIQ + \beta_9 INDEP + \beta_{10} DE + \beta_{11} SIZE \quad (1)$$

本文以5个交易日为窗口半径设定被解释变量$CAR_{[-5,\ 5]}$，定义为样本公司在以5个交易日为半径的窗口期内的累积超额回报，日超额回报的计算方法为用“考虑现金红利再投资的个股日回报”减去“用流通市值加权法计算的考虑现金再投资的综合市场日回报”。本文选取的事件日也就是0日为2002年1月4日，也就是行业协会公

布通过2000至2001年度证券许可证年检会计师事务所名单的当天，[4]这是比较明确的信息公开日，自此，市场开始接触监管事件的相关信息。*ABS*为审计方的业务量优势，观测公司2001年的年度报告的披露时间虽晚于但比较接近事件日，反之，事件日距离2000年年报的最后发布日则相对较远。故此，本文仍然采用了2001年的上市公司资产规模和审计方信息来计量*ABS*变量，同时用2000年的审计业务信息作为敏感性测试。由于没有严格的标准来界定市场如何感知审计方的业务量优势，本文的计量可能存在误差，为尽量减少计量误差给研究结论带来的影响，笔者采用了多种定义和综合测试的方法。在第一种定义方式下，市场以分段的方式感知审计方的业务量差异，其理论依据则类似于长尾效应，即产品市场上少数热销产品占据着大多数购买频率（克里斯•安德森，2006）。据此，本文分别按审计方2001年的客户数量（*DNUM*）和客户总资产规模（*DCLI*）来进行排名，当样本公司的审计方排名进入前5则*ABS*取1，否则为0。为准确判断事务所的业务量，本文对Wind数据库中披露的事务所名称进行了标识，对于涉及分所的问题，标识的过程严格参考了行业协会公布的2001年通过年检的具有证券从业资格的事务所名单，如果在名单中作为独立所出现，则即使名称相似也作为独立的审计方，比如天健系的事务所作为独立的审计方予以标识。按照这一定义方式，样本公司实际上被分成两组，便于进行组间差异分析。在第二种定义方式下，假设市场会以连续而非分段的方式进行感知，本文则直接选用审计方的客户家数（*NUM*）和总资产规模（*CLI*）的自然对数来刻画ABS。

模型中的财务风险指标包括公司在2000年是否微利*SP*、是否亏损*LOSS*、是否被出具非标准审计意见*OP*、经营活动现金流量和总资产的比值*OCF*以及流动比率*CURA*，这些指标被证明和审计行为高度相关（王跃堂和陈世敏，2001；Chen *et al.*, 2001）。*SP*、*LOSS*和*OP*为虚拟变量，样本公司是微利则*SP*取1，否则为0；是亏损则*LOSS*取1，否则为0；被出具非标准审计意见则*OP*取1，否则为0，微利指样本公司总资产回报率在(0，0.01]。公司治理指标包括前5大股东持股比例平方和*HER5*、流通股比例*LIQ*和独立董事占董事会成员比例*INDEP*。此外，本文还控制了样本公司的资产负债率*LEV*和总资产的自然对数*SIZE*。最后，本文在模型中加入了行业虚拟变量。为避免行业虚拟变量之间的多重共线性，本文主要采用了6类板块分类法，由于不包含金融行业的公司，本文的研究样本实际上分布在5个行业，从而加入了4个虚拟变量。

[4] 见行业协会的网站，地址为 http://www.cicpa.org.cn/topnews/200804/t20080428_1461.htm。

(二)样本和数据来源

本文按照下列步骤选取有效样本，在2001年存续具有完整的2000合并报表的财务和市场交易数据的953个非金融样本公司组成的观察值中，首先剔除83个在事件期[-5, 5]发生重大事件的观察值，以防止因变量受到这些事件的干扰。重大事件包括配股公告、增发公告、派现公告、公司违规、兼并收购和重大诉讼。随后，本文针对日交易数据的缺失加设了两个条件，一是样本公司在事件期[-120, 0]内有效的交易日数据不低于50，以防止市场模型的估计样本过少，二是样本公司可供研究的交易日数据在事件期[-5, 5]内没有缺失，以免研究样本包含系统性的差异，此项步骤剔除观察值102个，获得观察值768个。再后，剔除了117家受处罚事务所在2000年的原客户公司组成的观察值，这部分公司的事件反应中可能包含了对更换事务所的成本的评价，从而和其他公司出现系统差异。此外，笔者阅读了该类公司的2001年年度报告中"重大事项"章节的"聘任会计师事务所"小节的内容，发现有近半数的公司的变更日期难以判断，并且，可判断公司中也有部分样本的变更日期在事件日窗口期内或者之后，这些问题的存在使得被处罚公司的原客户公司不宜再进入测试范围。接下来，笔者阅读了其余在2001年年度审计过程中的变更事务所的公司，剔除了变更日期在窗口期[-5,+∞]或者无法准确判断变更日期的16个观察值并剩余观察值635个。最后，在因研究变量缺失而删除了部分观察值后，本文共获得592个有效观察值。对于选取出来的有效观察值，为防止极值效应，本文对除独立董事比例$INDEP$和审计方客户数NUM以外的所有连续变量在上下1%的水平上进行了缩尾(Winsorize)，极值处理后的特征变量描述性统计见表1。

从表中可以看出，有不到10%的样本公司小额赢利，被出具非标准审计意见的观测值比例则略微超过10%，样本公司中亏损的比率不足6%。最后，从表中还可以看出，样本公司平均流通股比例不足40%，聘请独立董事的观测值也在少数。数据来源方面，财务数据和交易数据来自深圳国泰安信息技术有限公司的中国证券市场研究数据库(简称CSMAR，版本号3.1，下同)。审计意见和审计方名称来自Wind中国金融数据库。

四、审计业务量效应的检验结果

为检验监管示范下的审计业务量效应，本文拟通过系统的检验来考察业务量规模和市场感知的服务质量之间的关系，检验主要包括组间测试和回归测试两大类。

(一)组间测试

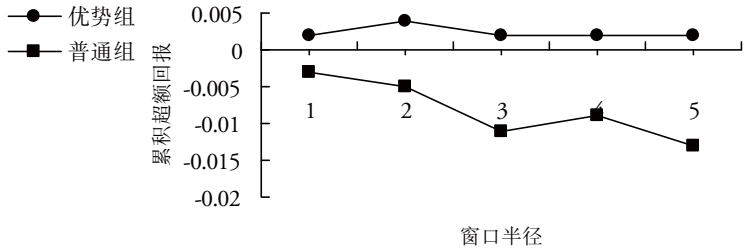
笔者首先将样本公司根据NUM变量分成两组，NUM取1时样本公司的审计方具有业务量优势，NUM取0的一组则没有。随后，将累积超额回报的窗口半径从1天逐渐增加到5天，然后分别测试业务量的优势组是否具有更高的累积超额回报，均值差异的检验结果见图1。

表1 特征变量描述性统计

变量名	样本数	标准差	最小值	最大值	均值	中位数
$CAR_{[-5,5]}$	592	0.060	-0.220	0.129	-0.010	-0.003
DNUM	592	0.388	0.000	1.000	0.184	0.000
DCLI	592	0.349	0.000	1.000	0.142	0.000
NUM	592	11.792	2.000	49.000	22.926	20.000
CLI	592	0.754	21.934	25.528	24.238	24.241
SP	592	0.283	0.000	1.000	0.088	0.000
OP	592	0.315	0.000	1.000	0.111	0.000
LOSS	592	0.233	0.000	1.000	0.057	0.000
CURA	592	1.134	0.488	6.883	1.903	1.561
OCF	592	0.071	-0.149	0.250	0.046	0.043
HER5	592	0.156	0.025	0.703	0.252	0.222
LIQ	592	0.121	0.127	0.734	0.385	0.366
INDEP	592	0.068	0.000	0.727	0.018	0.000
DE	592	0.159	0.075	0.839	0.412	0.403
SIZE	592	0.774	19.315	23.153	20.935	20.854

$CAR_{[-5,5]}$：以5天为窗口半径的累积超额回报率，日超额回报的计算方法为考虑现金红利的日回报减去考虑现金红利再投资的综合日市场回报；*DNUM*：当样本公司的审计方具有客户数量优势取1，否则为0；*DCLI*：当样本公司的审计方具有客户规模优势取1，否则为0；*NUM*：样本公司审计方的客户数量；*CLI*：样本公司审计方的客户资产总额的自然对数；*SP*：样本公司2000年净利润与期末总资产的比值处于(0,0.01]之间取1，否则为0；*OP*：样本公司2000年审计意见，当被出具非标准无保留审计意见取1，否则为0；*LOSS*：样本公司2000年亏损取1，否则为0；*CURA*：样本公司2000年的流动比率；*OCF*：样本公司2000年经营活动现金流量和期末总资产的比值；*HER5*：样本公司2000年前5大股东持股比例的平方和；*LIQ*：样本公司2000年的流通股比例；*INDEP*：样本公司2000年独立董事占董事会成员比例；*DE*：样本公司2000年的资产负债率；*SIZE*：样本公司年末总资产的自然对数。

组别	样本量	$CAR_{[-1,1]}$	$CAR_{[-2,2]}$	$CAR_{[-3,3]}$	$CAR_{[-4,4]}$	$CAR_{[-5,5]}$
优势	109	0.002	0.004	0.002	0.002	0.002
普通	483	-0.003	-0.005	-0.011	-0.009	-0.013
T值		1.80*	2.57**	2.64***	2.24**	2.62***

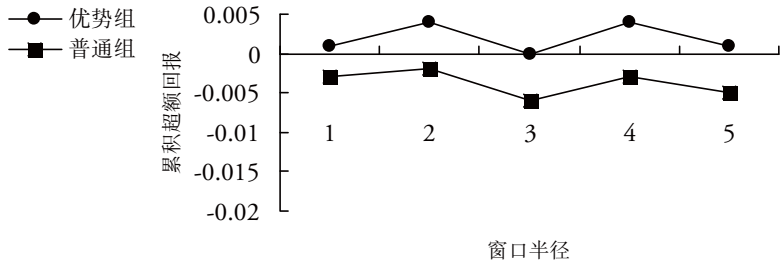


*、**和***分别代表T检验在10%、5%和1%的水平上拒绝零假设，双尾。

图1 审计业务量效应的组间均值测试

从图中可以看出，随着窗口期的增加，组间的均值差异从0.005变化为0.015，基本表现为递增的趋势。并且，各种窗口长度的组间差异都在低于10%的水平上拒绝零假设，体现出明显的差异，这初步表明当客户公司的审计方的业务量越高，市场感知的审计质量也更好。接下来，图2展示了中位数的组间差异测试结果。

组别	样本量	$CAR_{[-1,1]}$	$CAR_{[-2,2]}$	$CAR_{[-3,3]}$	$CAR_{[-4,4]}$	$CAR_{[-5,5]}$
优势	109	0.001	0.004	0.000	0.004	0.001
普通	483	-0.003	-0.002	-0.006	-0.003	-0.005
Z值		2.04**	2.77***	2.41**	2.07**	2.09**



*、**和***分别代表Wilcoxon检验在10%、5%和1%的水平上拒绝零假设，双尾。

图2 审计业务量效应的组间中位数测试

从图2可以看出，中位数的检验结果和均值检验的结果基本类似，在所有的窗口期下，组间差异都是明显的，这印证了审计业务量效应的存在。

（二）回归测试

模型（1）被用于进行截面的多元回归测试，结果见表2。

表2 监管和审计业务量效应－最小二乘回归

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	系数	P值	系数	P值	系数	P值	系数	P值
截距	-0.0926	0.18	-0.0711	0.31	-0.1035	0.14	-0.2723***	0.00
ABS	0.0172***	0.01	0.0125*	0.08	0.0005***	0.01	0.0092***	0.01
SP	-0.0519***	0.00	-0.0518***	0.00	-0.0523***	0.00	-0.0529***	0.00
OP	0.0109	0.20	0.0124	0.15	0.0113	0.18	0.0114	0.18
LOSS	-0.0196*	0.09	-0.0225**	0.05	-0.0196*	0.09	-0.0210*	0.06
CURA	0.0005	0.86	0.0004	0.89	0.0004	0.89	0.0009	0.76
OCF	0.0928***	0.01	0.0901**	0.01	0.0956***	0.01	0.0933***	0.01
HER5	0.0408**	0.04	0.0397**	0.05	0.0394**	0.05	0.0359*	0.08
LIQ	0.0389	0.12	0.0373	0.14	0.0368	0.14	0.0351	0.16
INDEP	-0.0257	0.48	-0.0311	0.39	-0.0233	0.52	-0.0304	0.40
DE	0.0001	1.00	0.0023	0.92	-0.0012	0.96	0.0041	0.86
SIZE	0.0023	0.50	0.0014	0.69	0.0025	0.47	0.0005	0.89
样本量	592		592		592		592	
Adj R^2	0.0846		0.0774		0.0830		0.0846	
F值	4.64***		4.31***		4.56***		4.64***	

*、**和***分别代表显著性检验在10%、5%和1%的水平上拒绝零假设，双尾；模型包含4个行业虚拟变量，限于篇幅未列出，变量定义同表1。

出于篇幅的考虑，表2仅列示了因变量为$CAR_{[-5,5]}$的检验结果，更短窗口期的测试见后面的敏感性测试部分。从表2中可以看出，在控制了财务风险、公司治理和其他公司特征后，不论以何种方式来定义审计业务量，ABS变量的估计系数均为正显著（双尾），符合预期，暗示市场在监管的示范效应下根据审计业务量调整了对客户公司的价值的预期。回归检验的结果，印证了审计业务量和市场感知的服务质量相关，其原因便是审计方的后续的机会主义概率受到了监管的抑制。

（三）进一步的测试

在普通最小二乘回归的基础上，本文随后将采用各种额外的测试来获取更多的信息。首先，笔者借鉴Karafiath (1988)的虚拟变量法来测试研究模型，该法实际上利用另一种算法提供了超额回报的数值，也就是利用市场模型来估计预期收益率，在其他方面和模型（1）并无差异，但仍然提供了额外的参考信息。具体的做法为，对以事件日为0期的期间[-5, 5]中的11个交易日设立11个虚拟变量A_1至A_{11}，然后利用模型B对每一个公司在研究期间[-120, 5]的交易数据进行估计，模型B见下：

$$DRET = \alpha + \beta_1 MDRET + \beta_2 A_1 + \beta_3 A_2 + \beta_4 A_3 + \beta_5 A_4 + \beta_6 A_5 + \beta_7 A_6 + \beta_8 A_7 + \beta_9 A_8 + \beta_{10} A_9 + \beta_{11} A_{10} + \beta_{12} A_{11} + \varepsilon \quad (2)$$

其中$DRET$为考虑现金红利再投资的个股日回报，$MDRET$为用流通市值加权法计算的考虑现金再投资的综合市场日回报。在删除了少量调整后拟和系数为负的观测值后，笔者加总了β_2至β_{12}以得到新的累积超额回报$KCAR_{[-5,5]}$，$KCAR_{[-5,5]}$被作为因变量置于模型（1）中进行再检验，检验的结果见表3。对照表2可以看出，除将ABS定义为$DCLI$时估计系数仅通过了单尾的显著性检验，其馀3个模型中ABS变量的估计系数均通过了双尾的显著检验，基本验证了表2的检验结果。

在第二项测试中，考虑到本研究的事件日对所有样本公司而言是同一的公历日，笔者借鉴Sefcik and Thompson (1986)的投资组合时间序列回归法来进行测试。该法有助于修正事件日同一的研究环境下的异方差以及残差相关性问题，在截面回归模型存在变量缺失问题时提供了相对无偏的标准差信息。该法运用ABS变量（包括连续和非连续定义）构造投资组合，以较长期（通常是1年的交易日）间的投资组合的日回报为因变量，控制市场回报并检验投资组合在事件期的回报是否超过年度其他期间的回报，模型见下：

$$PODET_i = \alpha + \beta_1 MDRET_i + \beta_2 EVT + \varepsilon \quad (3)$$

其中$PODET$为根据审计业务量变量构造的投资组合的日回报。首先，建立一个N×2（N行2列，下同）的矩阵$A = (ONE_v, ABS_v)$，其中ONE_v为N×1的由整数1组成的列向量，ABS_v为N×1的由ABS组成的列向量，N为样本公司数。然后，利用下列公式计算投资组合的权重：

$$(A'A)^{-1}A' = \begin{pmatrix} W_{ONE} \\ W_{ABS} \end{pmatrix} \quad (4)$$

表3 监管和审计业务量效应—虚拟变量法下的最小二乘回归

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	系数	P值	系数	P值	系数	P值	系数	P值
截距	-0.0561	0.41	-0.0402	0.56	-0.0638	0.35	-0.1944**	0.04
ABS	0.0127**	0.04	0.0092	0.19	0.0004*	0.07	0.0070**	0.03
SP	-0.0495***	0.00	-0.0494***	0.00	-0.0497***	0.00	-0.0502***	0.00
OP	0.0125	0.14	0.0136	0.11	0.0128	0.13	0.0129	0.13
LOSS	-0.0158	0.16	-0.0180	0.11	-0.0159	0.16	-0.0167	0.14
CURA	0.0012	0.69	0.0011	0.71	0.0011	0.71	0.0015	0.62
OCF	0.0688*	0.06	0.0667*	0.06	0.0707**	0.05	0.0693**	0.05
HER5	0.0376*	0.06	0.0368*	0.07	0.0367*	0.07	0.0342*	0.09
LIQ	0.0332	0.18	0.0320	0.20	0.0316	0.20	0.0304	0.22
INDEP	-0.0271	0.45	-0.0311	0.39	-0.0254	0.48	-0.0307	0.39
DE	-0.0036	0.88	-0.0019	0.93	-0.0046	0.84	-0.0009	0.97
SIZE	0.0009	0.79	0.0002	0.94	0.0011	0.76	-0.0005	0.89
样本量	589		589		589		589	
Adj R^2	0.0664		0.0623		0.0650		0.0669	
F值	3.79***		3.61***		3.73***		3.81***	

*、**和***分别代表显著性检验在10%、5%和1%的水平上拒绝零假设，双尾；模型包含4个行业虚拟变量，限于篇幅未列出，变量定义同表1。

W_{ABS}为1×N的由投资组合权重组成的行向量。接下来，对研究期间[X, Y]的每个交易日的个股日回报，构造Y-X+1个N×1的列向量D_i，再用$W_{ABS} \times D_i$即可得到Y-X+1个投资组合回报$PODET_i$，i为日期数，取值范围[1, Y-X+1]，本文设定X = -125且Y = 124从而得到250个回归观测点，基本达到一年的交易日数量。投资组合样本公司的选择和模型(1)基本一致，不同之处是无需控制2000年财务、公司治理和其他特征等因素，所以进入投资组合的样本公司数较模型(1)有所增加。此外，矩阵设计要求每一个样本公司的交易日数据在窗口期[-125, 124]是连续的，故此，笔者剔除了在此期间交易日数据不足240的样本公司，因为这些公司可能和其余样本公司存在系统差异。对于有效的观测值的日回报，通过1%的水平的缩尾以防止极值效应，少量缺失的交易日数据用当日市场回报替代。$MDRET$为用流通市值加权法计算的考虑现金再投资的综合市场日回报。EVT为虚拟变量，当回归日处于窗口期[-5, 5]则取1，否则为0，窗口期和模型(1)的设定一致，β_2正显著则验证了审计业务量效应的存在。此外，笔者还针对窗口期[-5, 5]内的11个交易日设计了的*D(-5)*到*D(5)*共计11个虚拟变量来替换EVT，通过单日回归提供窗口期内单个交易日的回报状况，不过限于篇幅，仅在下表中列示了至少通过单尾正显著检验的交易日的信息。

表4 投资组合时间序列回归

组合依据	*DNUM*		*DCLI*		*NUM*		*CLI*	
	系数	P值	系数	P值	系数	P值	系数	P值
截距	0.0001	0.36	0.0000	0.53	0.0002	0.17	0.0001	0.33
MDRET	-0.0520***	0.00	-0.0018***	0.00	-0.0435***	0.00	-0.0285***	0.00
EVT	0.0009	0.13	0.0000	0.23	0.0005	0.51	0.0006*	0.08
样本量	250		250		250		250	
Adj R^2	0.2293		0.1960		0.0956		0.2254	
F值	38.04***		31.36***		14.16***		37.24***	
单日回归								
显著日期	*D(2)*、*D(3)*、*D(5)*		无		*D(2)*、*D(3)*		*D(3)*、*D(5)*	

*、**和***分别代表显著性检验在10%、5%和1%的水平上拒绝零假设，双尾；单日回归模型为$PODET_i = \alpha + \beta_1 MDRET_i + \beta_2 D(-5) + \beta_3 D(-4) + \beta_4 D(-3) + \beta_5 D(-2) + \beta_6 D(-1) + \beta_7 D(0) + \beta_8 D(1) + \beta_9 D(2) + \beta_{10} D(3) + \beta_{11} D(4) + \beta_{12} D(5) + \varepsilon$；*MDRET*为用流通市值加权法计算的考虑现金再投资的综合市场日回报；*EVT*为虚拟变量，当回归日处于窗口期[-5，5]则取1，否则为0。

从表中可以看出，当*ABS*取*DNUM*时，*EVT*变量在13%的水平上拒绝零假设，当*ABS*取*CLI*时，*EVT*变量则在低于10%的水平上拒绝零假设。而从单日回归可见，业务量效应基本上体现在事件日之后的期间内，但并非每天都显著。故此，投资组合回归也为审计业务量效应提供了证据，但似乎支持的程度弱于截面回归。相对于控制公司特征的截面数据回归测试，投资组合回归从时间序列的角度提供了新的参考信息。

表5 Bootstrap回归

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	系数	P值	系数	P值	系数	P值	系数	P值
截距	-0.0926	0.15	-0.0711	0.25	-0.1035	0.12	-0.2723***	0.01
ABS	0.0172***	0.01	0.0125*	0.08	0.0005**	0.01	0.0091**	0.01
SP	-0.0519***	0.00	-0.0518***	0.00	-0.0523***	0.00	-0.0529***	0.00
OP	0.0109	0.27	0.0124	0.21	0.0113	0.24	0.0114	0.24
LOSS	-0.0196	0.19	-0.0225	0.14	-0.0196	0.19	-0.0210	0.16
CURA	0.0005	0.84	0.0004	0.88	0.0004	0.87	0.0009	0.72
OCF	0.0928**	0.02	0.0901**	0.03	0.0956**	0.02	0.0933**	0.02
HER5	0.0408**	0.05	0.0397*	0.06	0.0394**	0.05	0.0359*	0.09
LIQ	0.0389	0.13	0.0373	0.14	0.0368	0.15	0.0351	0.17
INDEP	-0.0257	0.53	-0.0311	0.42	-0.0233	0.54	-0.0304	0.43
DE	0.0001	1.00	0.0023	0.92	-0.0012	0.96	0.0041	0.86
SIZE	0.0023	0.47	0.0014	0.65	0.0025	0.45	0.0005	0.88
样本量	592		592		592		592	
Adj R^2	0.0846		0.0774		0.0830		0.0846	
Wald χ^2	49.82***		37.30***		51.59***		44.91***	

*、**和***分别代表显著性检验在10%、5%和1%的水平上拒绝零假设，双尾；模型包含4个行业虚拟变量，限于篇幅未列出，变量定义同表1。

在第三项测试中，笔者用靴带回归（Bootstrap）方法对模型（1）进行了测试。通过放宽研究数据的分布假设，靴带回归通过1000次抽样提供了更多的参考信息，结果见表5。从表中可以看出，*ABS*变量的Z检验在所有回归中均通过了双尾的显著性检验，和截面回归的结果基本一致，这验证了表2结果的坚实性。

在第四项测试中，笔者拟采用疗效（Treatment-effect）回归来处理研究可能存在的自选择问题，两阶段估计法的测试结果见表6。

表6 疗效Treatment-effect回归

因变量	客户数量				客户规模			
	DNUM 一阶段选择模型		$CAR_{[-5,5]}$ 二阶段模型		*DCLI* 一阶段选择模型		$CAR_{[-5,5]}$ 二阶段模型	
	系数	P值	系数	P值	系数	P值	系数	P值
ABS			0.0825	0.14			0.1535***	0.01
截距	-1.4390	0.41	-0.0919	0.21	-9.6441***	0.00	0.1750	0.20
SP	-0.0675	0.77	-0.0510***	0.00	-0.1374	0.60	-0.0480***	0.00
OP	0.3342	0.11	0.0061	0.54	-0.0314	0.90	0.0143	0.19
LOSS	-0.6927**	0.05	-0.0075	0.64	-0.0993	0.77	-0.0186	0.20
CURA			0.0003	0.92			0.0003	0.93
OCF			0.0925***	0.01			0.0911**	0.02
HER5	-0.8241	0.11	0.0516**	0.03	-0.9124	0.11	0.0605**	0.03
LIQ	-0.5521	0.38	0.0471*	0.09	-0.3758	0.58	0.0459	0.15
INDEP	0.6677	0.47	-0.0351	0.38	2.1933***	0.01	-0.1206**	0.04
DE	0.9018**	0.04	-0.0172	0.54	0.4626	0.33	-0.0130	0.64
SIZE	0.0262	0.76	0.0018	0.64	0.4100***	0.00	-0.0114	0.10
INV	1.0067*	0.06			0.8744	0.13		
AR	-0.7167	0.21			-0.2333	0.70		
Hazard Lambda			-0.0374	0.24			-0.0774***	0.02
样本量	592				592			
Wald χ^2	70.27***				82.91***			

*、**和***分别代表显著性检验在10%、5%和1%的水平上拒绝零假设，双尾；*INV*：样本公司存货净额占期末总资产比值；*AR*：样本公司应收账款净额占期末总资产比值；以累积超额回报为因变量的主模型包含行业虚拟变量，限于篇幅未列出，变量定义同表1。

针对审计业务量的选择模型，笔者选取了存货和应收账款规模作为工具变量，选取的理由如下。高存货水平的公司可能会选择因业务量较大而积累更多专业优势的审计方，也就是存货和应收账款的审计在很大程度上依赖于审计方的专业性，但监管事件的信息冲击更偏向于影响审计方的独立性，故此，这两个工具变量对公司在事件冲击下的超额回报的影响相对间接。就内生性问题而言，考虑到被审计方选择客户需经一定的时间，相对于监管事件引发的信息冲击处于相对静态，从而研究设计本身能对内生性问题有所抑制。反之，在采用自选择模型时涉及工具变量的选取问题，工具变量的合理性和解决内生性问题的能力均应该谨慎的予以评价（Francis and Lennox, 2008）。故此，笔者提醒读者谨慎的评价本研究所采用的工具变量的有效性，以及此部分统计结果对真实经济状况的刻画能力。

从表6可以看出，在以*DNUM*和*DCLI*为业务量优势的选择模型中，*INV*变量的估计系数至少通过了单尾的正显著测试，符合预期，不过，*AR*变量则未能通过显著性检验。此外，在相对控制了自选择问题后，*ABS*取*DNUM*时单尾显著，取*DCLI*时双尾显著，可以说为审计业务量效应提供了额外的支持。此外，当笔者用极大似然而非两阶段来处理疗效回归时，发现*ABS*的估计系数均通过了双尾的显著性检验，但出于谨慎性考虑，在此主要报告了相对较弱的结果。

最后，笔者通过改变样本量或者变量设计方式来验证模型（1）的结果的稳健性，检验结果见表7。限于篇幅，表7仅列示了核心变量*ABS*的估计系数和显著性检验的P值。

表7 敏感性测试

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	系数	P值	系数	P值	系数	P值	系数	P值
测试1：样本量不变，将因变量改成$CAR_{[-2,2]}$								
ABS	0.0102***	0.00	0.0065*	0.10	0.0003**	0.02	0.0026	0.16
测试2：样本量不变，用2000年的审计数据确定自变量*ABS*								
ABS	0.0120*	0.08	0.0087	0.22	0.0004*	0.07	0.0071**	0.02
测试3：变量不变，不剔除交易日较少、事务所变更和发生重大事件的样本，样本量增至889								
ABS	0.0130***	0.01	0.0133**	0.04	0.0004**	0.03	0.0071***	0.01
测试4：变量不变，剔除所有变更事务所的样本，样本减少至567								
ABS	0.0160***	0.01	0.0108	0.14	0.0005**	0.02	0.0085***	0.01

DNUM：当样本公司的审计方具有客户数量优势取1，否则为0；*DCLI*：当样本公司的审计方具有客户规模优势取1，否则为0；*NUM*：样本公司审计方的客户数量；*CLI*：样本公司审计方的总客户资产的自然对数。

在第一项测试中，笔者将窗口半径改成较短的2天，然后用因变量$CAR_{[-2,2]}$对模型(1)进行了重新测试，结果发现所有统计结果均至少通过了单尾的显著性检验，从而验证了先前的结论。在第二项测试中，笔者用2000年的审计业务信息重新定义*ABS*变量，结果发现除*ABS*取*DCLI*时P值超过了0.2以外，其余三个模型均通过了双尾的显著性检验，基本验证了已有的结论。测试3和测试4改变了样本量，或是不删除交易日较少、事务所变更和发生重大事件的样本公司以增加观测值，或是剔除所有变更事务所的样本公司以减少观测值，统计结果均未发生显著的改变。

五、结论

在准租效应和赔偿机制下，审计方减少机会主义行为的收益和业务量相关联。而在监管的保护作用下，“资格取缔”型惩戒措施同样可以示范机会主义成本和业务量的关联度，进而激发审计业务量的效应。本文为此命题提供了初步的理论分析和经验证据，从统计结果来看，在监管事件带来的信息冲击下，市场根据审计方的业务量调整了对客户公司价值的预期，这有助于我们理解在准租和深口袋效应外，审计业务量效应是否存在其他的激发机制。而本文所揭示出的监管的示范效应，也可能为后续的研究提供启示，比如探讨抑制审计市场的逆选择可以选择何种机制的问题。最后，笔者也郑重指出本文的局限。其一，在考察审计业务量的效应时，本文更多的依赖于市场的感知质量，这意味着研究设计对市场的有效性(如获取监管信息的能力)有较强的依赖。并且，间接式的检验涉及备选解释的可能，本文虽然采用了多种变量设计方法但也未必能够完美的解决这一问题。其二，在系统的检验中，少数统计结果有所反复，比如投资组合时间序列回归中的统计结果相对弱化，这说明证据的强度需被谨慎评价。最后，本研究在一个相对简化的环境中研究审计问题，对审计方、公司管理层和投资者之间的互动策略未进行直接的检验。

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The Audit Business Scale Effect of Regulatory Activities [1]

Ziye Zhao[2]

Abstract

The motivation of large auditors to engage in opportunistic behaviour will be lower if their potential losses from damage to reputation and litigation penalties are higher. This paper aims to provide a theoretical analysis of and empirical evidence for the question of whether the audit business scale effect (ABSE) may result from audit regulation. In 2002, five CPA firms were disqualified because of audit failures or violation of professional rules. I conduct an event study and find that the more businesses an auditor has, the higher the cumulative abnormal return (CAR) its clients will have. Such a finding reveals that investors will revise their expected market value of listed firms in accordance with the auditor's business scale. A possible explanation is that both investors and auditors receive a signal for a positive relation between the audit business scale and the cost of misconduct from such regulatory activities, since opportunistic behaviour will cost each dishonest auditor the loss of all its businesses. When investors expect that large auditors will have greater incentive to provide high quality audits because they have more businesses at risk as a result of regulation, the market values of listed firms with large auditors will thereby increase. Taking everything together, this paper indicates that audit regulation leads to ABSE, since regulators can warn honest audit firms while punishing dishonest ones.

Keywords: Audit Business Scale, Regulation, Market Reaction
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[2] Ziye Zhao, PhD, Institute of Accounting and Finance, School of Accountancy, Shanghai University of Finance and Economics. E-mail address: zhao.ziye@mail.shufe.edu.cn.

I. Introduction

Because of the prevalence of information asymmetry, researchers have paid much attention both to interactions among the stakeholders of auditing services and to audit market equilibrium. In general, audit quality is likely to be related to variables that affect the motivation of auditors to engage in opportunistic behaviour, such as aggregate quasi rents and the depth of the auditors' pockets (DeAngelo, 1981; Dye, 1993). Consistent with such conjectures, a great deal of evidence now shows that the business scale of an audit firm is positively related to indicators of audit quality, such as a client's earnings response coefficient (ERC), fairness of accruals, cost of debt financing, and the attenuation of under-pricings in initial public offerings (IPOs) (Balvers *et al.,* 1988; Eichenseher *et al.,* 1989; Teoh and Wong, 1993; Lenox, 1999; Francis *et al.,* 1999; Pittman and Fortin, 2004).

This paper focuses on the formation mechanisms of the audit business scale effect (ABSE) under systems of reputation and litigation, such as the disqualification of dishonest auditors in response to regulatory activities. In an event study on such activity, I find that the market value of listed firms will be revised according to the business scale of the auditors as the association between the cost of misconduct and the audit business scale is enforced. This result indicates that regulators point out the cost of opportunistic behaviour to auditors and investors through their regulatory activities.

This study contributes to the audit literature in several ways. First, it adds new evidence concerning the development of the formation mechanisms of ABSE. DeAngelo (1981) and Dye (1993) show that both quasi rents and litigation are able to activate ABSE. In contrast, my study investigates whether regulatory activities can result in ABSE when regulators try to eliminate opportunistic behaviour by presenting the cost of being dishonest. Second, this research reveals additional information about audit quality and the characteristics of the distribution of audit services in China. Although the research results on China's audit markets are mixed, the information content of the evidence could be enhanced by certain approaches, such as using the mode of concentration of audit services as an additional variable, and constructing research settings based on major events in the audit market (Zhang, 2005; Zhou and Lu, 2007; Chan and Wu, 2009). To contribute to the literature on China's audit markets, this paper focuses on a disqualification event and extends the general audit framework with a new variable, which is a demonstration of the cost of audit misconduct. Third, research in recent years shows that regulatory activities in China are of great benefit to investors (Chen and Yuan, 2004; Pistor and Xu, 2005; Chen *et al.,* 2008). Clearly, we need more evidence to reveal all the processes involved in regulatory activities that protect investors. This paper is expected to meet this requirement.

The remainder of the paper proceeds as follows. In the next section, I develop a framework for ABSE through which to examine whether regulatory activities can act as a formation mechanism for ABSE. Section III describes the sample data and models. Empirical tests and results are reported in the fourth section. Finally, I conclude the paper with implications for future research and a summary of this study's limitations.

II. The Audit Business Scale Effect Activated by Regulatory Activities

The size of an auditor will significantly influence audit decisions if an ABSE exists. As far as auditors are concerned, the audit business scale is likely to be related to losses owing to audit failures, and therefore will affect an auditor's commitment to independence, whereas clients will use the size of an auditor as a proxy for audit quality. Altogether, ABSE has implications for practice because it reveals the underlying realities of audit contracts.

1. A Standard Framework for the Audit Business Scale Effect

DeAngelo (1981) posits that both the technological capabilities (discovery) and independence (report) of an auditor are determinants of audit quality. In terms of auditor competence, the probability that an auditor will detect mistakes in a financial report and the reporting incentives of a client depend on (1) the auditor's abilities in describing the economic realities with accounting information, (2) the resources the auditor has spent for understanding the specific information about the client's business, and (3) the auditor's capability of discerning the characteristics of investor information requirements. On the other hand, an auditor's independence benefits from both effective incentives and regulatory activities, from which researchers can detect variables that are related to quality. For example, DeAngelo (1981) shows that large auditors with more quasi rents are more motivated to commit to higher quality audit services since they have more to lose if the audit fails. Dye (1993) posits that auditors with more business have greater incentive to be independent in auditing, since they have more wealth (deeper pockets) at risk of litigation penalties. The association between auditor size and audit quality can therefore be observed in terms of reputation damage and litigation penalties. Taken together, the standard framework of ABSE includes the following steps. First, a given mechanism (incentive or regulatory) has a persistent influence on auditors. Second, the power of such influence is positively related to the audit business scale. Third, the relation between audit business and audit quality is enforced through the probability of the occurrence of opportunistic behaviour. Finally, both auditors and clients consider the audit business scale an important determinant in making audit decisions.

2. Demonstration of the Cost of Opportunistic Behaviour in Disqualification Activities

In addition to reputation and litigation systems, regulatory activities also have a significant influence on auditors and therefore deserve attention. Audit regulation is important in China for three reasons. First, the reputation mechanism triggered by repeated transactions is gradually developing, inasmuch as both the quantity and the complexity of audit services in China are lower than those in developed markets. Second, China's legal protection system has just undergone a gradual process of construction (Shen, 2004). The litigation system founded on litigation cost control and law enforcement experience is still under development. Third, a good deal of literature has presented the need for an active role by a regulatory system in an emerging market like China's (Chen and Yuan, 2004; Pistor and Xu, 2005; Chen *et al.,* 2008). Regulatory activities are thus important in emerging markets.

In fact, regulators not only punish auditors for opportunistic behaviour, but also warn them against potential misconduct. This is why regulation is able to activate ABSE. Moreover, ABSE will be enforced if the cost of being dishonest is demonstrated in the punishments imposed through regulatory activities. I posit two conditions that are essential to this cost demonstration. One is that both auditors and investors receive comprehensive information about the association between the audit business scale and losses from punishment. The other is that regulatory activities are long-lasting, and thus can significantly change the expectations of auditors. From the auditors' point of view, the cost of dishonesty is demonstrated in three stages: First, auditors observe sufficient information from regulatory activities such as instituting responsible executive departments, performing reviews, and implementing punishment schemes. Second, they evaluate the cost of potential opportunistic behaviour. Third, both auditors and clients incorporate the results of the evaluation into audit decisions. Overall, regulators not only punish dishonest auditors but also warn others in the course of supervision.

In an annual inspection of auditor qualifications for 2001, regulators – including the Chinese Institute of Certified Public Accountants (CICPA), the Ministry of Finance (MOF), and the China Securities Regulatory Commission (CSRC) – disqualified five CPA firms owing to audit failures or violations of professional rules.[3] These disqualification events drew much attention because of several significant audit failures that had occurred in 2001. To monitor opportunistic behaviour and protect investors, regulators punished

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[3] See the *Application of Opinions from the Annual Inspection of Auditors' Qualification for Auditing for 2000-2001* announced by the CICPA, and the *Responses to Opinions from the Annual Inspection of Auditors' Qualification for Auditing for 2000-2001* issued by the MOF.

the dishonest auditors by revoking their practicing licences. Such a supervision scheme is likely to activate ABSE for the following reasons. First, since the major determinant of disqualification is opportunistic behaviour during an audit, regulators will warn against all potential misconduct, likely reducing the motivation for misbehaviour. This warning system could change investors' expectations of the listed firms (clients). Second, after sorting the auditors by numbers of clients in the latest financial year before disqualification, I find that two of the disqualified CPA firms are among the top 10 auditors, another two among the 10th to 20th, while the last one is positioned within the 20th to 40th. The result shows that an auditor's entire business will be eliminated no matter how large the auditor size if dishonesty is found. If opportunistic behaviour leads to a loss of all business, then large auditors with more business will have higher incentive to avoid misconduct. Since both the determinants and consequences of regulation can be clearly observed, the information content of a disqualification event is sufficient to meet the requirement of ABSE. Although it is hard to identify all criteria for disqualification from public information, it is obvious that investor losses from audit failures have great influence on regulatory discretion. Third, the *Guide for Annual Inspection of Auditors' Qualification for Auditing* issued by the MOF and CSRC provides the rule basis for disqualification activities. The disqualification events occurring in 2002 show that the rule-based audit regulation had been further enforced. Last, the warning effect of disqualification activities is persistent, since disqualification events are always probable following the annual inspection.

Although several audit failures have been disclosed before the disqualification events, not until the licences of those firms are revoked will the necessary conditions for examining the ABSE triggered by regulation be fully met. The first condition is that the rules and regulations must not only exist but also work. For example, in 2002 regulators effectively implemented disqualification rules, showing that the supervision of the audit market is working well. The second condition is that the warning effect of the punishment scheme must be persistent. Punishment following annual inspections is a good example. The last condition is that the number of disqualified firms must be high enough to demonstrate the cost of opportunistic behaviour, and that auditors are able to observe adequate information about the determinants and consequences of misconduct.

In sum, when it is shown that the cost of opportunistic behaviour is positively related to the audit business scale, large auditors will have more incentive to be honest. As a result, investors will revise their expectations of a client's market value in accordance with the audit business scale, because audits can reduce agency costs and enhance firm value. In short, the more clients an auditor has, the higher the client's cumulative abnormal return (CAR).

III. Research Method

1. Research Model

As shown in the analysis of the ABSE of regulatory activities, the cost of opportunistic behaviour has been demonstrated and will be perceived by the market. In other words, a client's market value will change since an audit can reduce the agency cost of information asymmetry. To test for the ABSE, I investigate whether investors will revise their expectations about the client's market value in accordance with the audit business scale. The empirical relationship between the audit business scale and CAR captures ABSE through market perception, in which the decrease in the auditor's motivations for opportunistic behaviour is measured by the increase in the client's CAR. The following model is to be estimated:

$$CAR_{[-5,5]} = \alpha + \beta_1 ABS + \beta_2 SP + \beta_3 OP + \beta_4 LOSS + \beta_5 CURA + \beta_6 OCF + \beta_7 HER5 + \beta_8 LIQ + \beta_9 INDEP + \beta_{10} DE + \beta_{11} SIZE, \quad (1)$$

where $CAR_{[-5, 5]}$ is the CAR of listed firms (clients) over a short window of [-5, 5]. The daily abnormal return is calculated by subtracting the daily return weighted by tradable share value with cash dividends reinvested from the firm's daily return with cash dividends reinvested. The event day is 4 January 2002, on which the CICPA released the list of CPA firms that had passed the annual inspection for 2000-2001, and the information of ABSE began to flow into the market.[4] *ABS* is the audit business scale computed on the basis of audit business information for 2002 instead of 2001, since the event day is much closer to the announcement period for the annual reports of 2001 than those of 2000. I also test *ABS* based on 2000 data in sensitivity tests. I design *ABS* in two ways to minimise the noise of measurement, since it is hard to capture how investors perceive the business scale of an auditor based on all public information. First, I classify auditors into two groups – the top five auditors and the rest – by either the number of clients (*DNUM*) or the total assets of clients (*DCLI*). Such a classification method is inspired by the long-tail theory, which posits that a few hot products with famous brands dominate the entire market, since the theory also seems applicable to the audit market (Anderson, 2006). *ABS* is equal to 1 if a firm hires a top-five auditor, and 0 otherwise. When *ABS* is a dummy variable, the CAR of each group can be compared. To measure the audit business scale accurately, I identify auditors based on the list of qualified CPA firms released by the CICPA after the annual inspection for year 2000-

[4] See http://www.cicpa.org.cn/topnews/200804/t20080428_1461.htm.

2001. Auditors with different names in client reports are considered a single auditor if they are listed by the CICPA as independent subsidiaries of an audit firm, such as the Tianjian group. Second, *ABS* is measured by the number (*NUM*) or natural logarithm of total assets (*CLI*) of clients. If an ABSE of regulation exists, β_1 should be positively significant.

SP is equal to 1 if a firm reported a return on assets within [0, 0.01] in 2000, and 0 otherwise. *LOSS* is equal to 1 if a firm suffered a loss in 2000, and 0 otherwise. *OP* is a dummy variable with a value of 1 if a company was issued a modified opinion in 2000, and 0 otherwise. *CURA* is the current ratio of a firm. These indicators are proved to be highly relevant to auditing activities (Wang and Chen, 2001; Chen *et al.,* 2001). *OCF* is a company's cash flows from operating activities divided by total assets. *HER5* is the Herfindahl-Hirschman Index of ownership percentage held by the top-five shareholders. *LIQ* is the number of tradable shares divided by the number of outstanding shares. *INDEP* is the proportion of independent directors. I also control for the debt ratio (*LEV*) and the natural logarithm of total assets (*SIZE*). Finally, I control for industry differences by adding four dummy variables that capture the industry categories excluding the financial industry. I use the six-category industry codes to reduce the probabilities of multicollinearity.

2. Sample and Data Resources

I select the research sample by the following steps: First, of the 953 non-financial A-share listed firms in the Chinese Stock Market Accounting Research (CSMAR) database with complete financial data for 2000, I delete observations if an announcement of events, such as rights offerings, seasoned equity offerings, cash dividends, violation of profession rules, mergers and acquisitions, and major litigations, has been made within the window [-5, 5]. In this step, I exclude 83 such observations to reduce the noise of dependent variables. Second, I drop observations if the count of available daily return data within [-120, 0] is less than 50, or the count of available daily return data within [-5, 5] is less than 11. In this step, I delete 102 observations. Third, I delete 117 observations that hired the disqualified CPA firms in 2000, because their reactions to regulation may contain an evaluation of the cost of auditor turnover, and because the turnover dates cannot be fully identified from the annual reports. In addition, I also find that several firms change their auditors after the disqualification events. Taken together, these observations are not suitable for testing. Fourth, from the remaining observations I delete 16 whose auditor turnover dates are not available in the annual reports or are within the window [-5, $+\infty$]. Finally, I delete 43 observations with missing data and obtain 592 available observations.

I winsorise each continuous variable except *INDEP* and *NUM* at the top and bottom 1 per cent. Table 1 presents outlier-adjusted descriptive statistics. As shown, observations with small profits account for less than 10 per cent, observations with modified opinions slightly more than 10 per cent, and observations of loss firms less than 6 per cent. Finally, the average proportion of tradable shares in sample companies is less than 40 per cent, and only a few firms have hired independent directors. I take financial and transaction data from the CSMAR (Version 3.1) database and audit data from the Wind database.

Table 1 Descriptive Statistics

Variable	Sample Size	Std. Dev.	Minimum	Maximum	Mean	Median
$CAR_{[-5,5]}$	592	0.060	-0.220	0.129	-0.010	-0.003
DNUM	592	0.388	0.000	1.000	0.184	0.000
DCLI	592	0.349	0.000	1.000	0.142	0.000
NUM	592	11.792	2.000	49.000	22.926	20.000
CLI	592	0.754	21.934	25.528	24.238	24.241
SP	592	0.283	0.000	1.000	0.088	0.000
OP	592	0.315	0.000	1.000	0.111	0.000
LOSS	592	0.233	0.000	1.000	0.057	0.000
CURA	592	1.134	0.488	6.883	1.903	1.561
OCF	592	0.071	-0.149	0.250	0.046	0.043
HER5	592	0.156	0.025	0.703	0.252	0.222
LIQ	592	0.121	0.127	0.734	0.385	0.366
INDEP	592	0.068	0.000	0.727	0.018	0.000
DE	592	0.159	0.075	0.839	0.412	0.403
SIZE	592	0.774	19.315	23.153	20.935	20.854

Variable Definitions: $CAR_{[-5, 5]}$ is CAR over a short window of [-5, 5], in which the daily abnormal return is calculated by subtracting the daily return weighted by the market value of tradable shares with cash dividends reinvested from the firm's daily return with cash dividends reinvested. *DNUM* is equal to 1 if a firm hires a top-five auditor sorted by the number of clients. *DCLI* is equal to 1 if a firm hires a top-five auditor sorted by size of clients. *NUM* is the number of clients. *CLI* is the natural logarithm of total assets of clients. *SP* is equal to 1 if a company reported a return on assets within [0, 0.01] in 2000, and 0 otherwise. *LOSS* is equal to 1 if a firm suffered a loss in 2000, and 0 otherwise. *OP* is equal to 1 if a company has been issued a modified opinion in 2000, and 0 otherwise. *CURA* is the current ratio. *OCF* is a company's cash flows from operating activities divided by total assets. *HER5* is the Herfindahl-Hirschman Index of ownership percentage held by the top-five shareholders. *LIQ* is the number of tradable shares divided by the number outstanding shares. *INDEP* is the ratio of independent directors. *DE* is the debt ratio. *SIZE* is the natural logarithm of total assets.

IV. Empirical Results

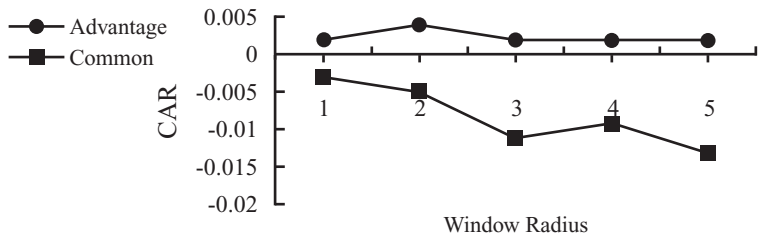
To detect the ABSE of regulatory activities, I test the empirical relationship between the audit business scale and the CAR of a disqualification event by group comparison and regressions.

1. Group Comparison

I classify observations into two groups and compare the CARs of each group. The Advantage group is composed of observations in which *DNUM* equals 1, and the Common group is composed of the remaining observations. CAR is computed over periods of [-1, 1], [-2, 2], [-3, 3], [-4, 4], and [-5, 5]. If the difference in CAR between the Advantage group and the Common group is significant, then investors are likely to revise their expectations of a client's value based on the audit business scale. Figures 1 and 2 describe the results of the mean tests and median tests, respectively.

Figure 1 Mean Test of Group Comparison

Group	Sample	$CAR_{[-1,1]}$	$CAR_{[-2,2]}$	$CAR_{[-3,3]}$	$CAR_{[-4,4]}$	$CAR_{[-5,5]}$
Advantage	109	0.002	0.004	0.002	0.002	0.002
Common	483	-0.003	-0.005	-0.011	-0.009	-0.013
T value		1.80*	2.57**	2.64***	2.24**	2.62***

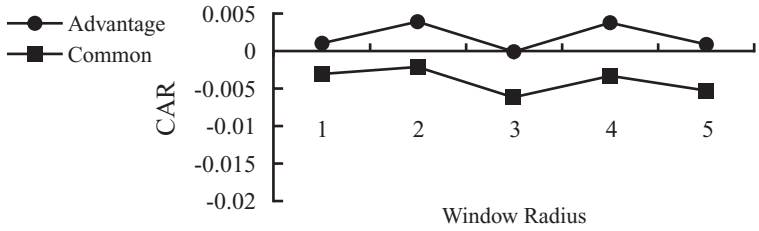


Note: *, **, and *** denote two-tailed t-test significance at the 0.10, 0.05, and 0.01 levels, respectively.

As Figure 1 shows, the difference in CAR between the Advantage group and the Common group grows gradually from 0.005 to 0.015 as the research window increases, and it is statistically significant. From Figure 2, it is also clear that the two groups differ significantly in their median values. Taken together, the results suggest that the larger the auditor's business scale, the higher the market's perceived audit quality will be.

Figure 2 Median Test of Group Comparison

Group	Sample	$CAR_{[-1,1]}$	$CAR_{[-2,2]}$	$CAR_{[-3,3]}$	$CAR_{[-4,4]}$	$CAR_{[-5,5]}$
Advantage	109	0.001	0.004	0.000	0.004	0.001
Common	483	-0.003	-0.002	-0.006	-0.003	-0.005
Z value		2.04**	2.77***	2.41**	2.07**	2.09**



Note: *, ** and *** denote two-tailed Wilcoxon test significance at the 0.10, 0.05, and 0.01 levels, respectively.

2. Test of Model 1

In this section I test ABSE by regressions; Table 2 describes the results of Model 1. The results of CAR with a window radius less than 5 are not listed for simplicity, but will be shown in the sensitivity tests. As Table 2 shows, the significance of the *ABS* variables is two-tailed in all regressions, while corporate characteristics such as financial risk and corporate governance are controlled for. This result suggests that the market value of clients is adjusted based on the audit business scale, as the relation between this and the cost of misconduct is demonstrated in the regulatory activities. The result also supports my conjecture that the disqualification activities can warn against potential opportunistic behaviour, and that audit business is related to perceived audit quality.

Table 2 Audit Business Scale Effect of Regulatory Activities – OLS

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	β	P	*β*	P	*β*	P	*β*	P
Intercept	-0.0926	0.18	-0.0711	0.31	-0.1035	0.14	-0.2723***	0.00
ABS	0.0172***	0.01	0.0125*	0.08	0.0005***	0.01	0.0092***	0.01
SP	-0.0519***	0.00	-0.0518***	0.00	-0.0523***	0.00	-0.0529***	0.00
OP	0.0109	0.20	0.0124	0.15	0.0113	0.18	0.0114	0.18
LOSS	-0.0196*	0.09	-0.0225**	0.05	-0.0196*	0.09	-0.0210*	0.06
CURA	0.0005	0.86	0.0004	0.89	0.0004	0.89	0.0009	0.76
OCF	0.0928***	0.01	0.0901**	0.01	0.0956***	0.01	0.0933***	0.01
HER5	0.0408**	0.04	0.0397**	0.05	0.0394**	0.05	0.0359*	0.08
LIQ	0.0389	0.12	0.0373	0.14	0.0368	0.14	0.0351	0.16
INDEP	-0.0257	0.48	-0.0311	0.39	-0.0233	0.52	-0.0304	0.40
DE	0.0001	1.00	0.0023	0.92	-0.0012	0.96	0.0041	0.86
SIZE	0.0023	0.50	0.0014	0.69	0.0025	0.47	0.0005	0.89
Sample	592		592		592		592	
Adj R^2	0.0846		0.0774		0.0830		0.0846	
F Statistic	4.64***		4.31***		4.56***		4.64***	

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The model includes industry dummies not listed for simplicity.
Variable Definitions: All variables are as defined in Table 1.

3. Additional Tests

In this section, I perform additional tests to assess the validity of the empirical relationship between audit business scale and perceived audit quality. In the first test, I estimate the dependent variable in Model 1 by the method suggested by Karafiath (1988), in which the following regression is estimated on each observation to compute *KCAR*:

$$DRET = \alpha + \beta_1 MDRET + \beta_2 A_1 + \beta_3 A_2 + \beta_4 A_3 + \beta_5 A_4 + \beta_6 A_5 + \beta_7 A_6 + \beta_8 A_7 + \beta_9 A_8 + \beta_{10} A_9 + \beta_{11} A_{10} + \beta_{12} A_{11} + \varepsilon, \quad (2)$$

where *DRET* is a firm's daily return with cash dividends reinvested. *MDRET* is the daily return weighted by tradable share values of the market with cash dividends reinvested. Equation 2 is estimated over the estimation period [-120,-5] and the forecast period [-5, 5]. For each observation day *i* in the forecast period [-5, 5], there is one dummy variable A_i with a value of 1 on that day only, and 0 otherwise. $KCAR_{[-5, 5]}$ is the sum of coefficients of the 11 dummy variables. Tables 3 shows the results of Model 1, in which $KCAR_{[-5, 5]}$ is the dependent variable. The results are mostly consistent with those of Table 2 except that the significance of *ABS* is single-tailed when the audit business scale is defined as a dummy variable with a value of 1 if a firm hires a top-five CPA firm sorted by client size (*DCLI*).

Table 3 Audit Business Scale Effect of Regulatory Activities – Dummy Variable Method of Karafiath (1988)

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	β	P	*β*	P	*β*	P	*β*	P
Intercept	-0.0561	0.41	-0.0402	0.56	-0.0638	0.35	-0.1944**	0.04
ABS	0.0127**	0.04	0.0092	0.19	0.0004*	0.07	0.0070**	0.03
SP	-0.0495***	0.00	-0.0494***	0.00	-0.0497***	0.00	-0.0502***	0.00
OP	0.0125	0.14	0.0136	0.11	0.0128	0.13	0.0129	0.13
LOSS	-0.0158	0.16	-0.0180	0.11	-0.0159	0.16	-0.0167	0.14
CURA	0.0012	0.69	0.0011	0.71	0.0011	0.71	0.0015	0.62
OCF	0.0688*	0.06	0.0667*	0.06	0.0707**	0.05	0.0693**	0.05
HER5	0.0376*	0.06	0.0368*	0.07	0.0367*	0.07	0.0342*	0.09
LIQ	0.0332	0.18	0.0320	0.20	0.0316	0.20	0.0304	0.22
INDEP	-0.0271	0.45	-0.0311	0.39	-0.0254	0.48	-0.0307	0.39
DE	-0.0036	0.88	-0.0019	0.93	-0.0046	0.84	-0.0009	0.97
SIZE	0.0009	0.79	0.0002	0.94	0.0011	0.76	-0.0005	0.89
Sample	589		589		589		589	
Adj R^2	0.0664		0.0623		0.0650		0.0669	
F Statistic	3.79***		3.61***		3.73***		3.81***	

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The model includes industry dummies not listed for simplicity.
Variable Definitions: All variables are as defined in Table 1.

In the second test, I conduct the portfolio time-series regression of Sefcik and Thompson (1986), which is designed to deal with econometric problems, such as cross-sectional heteroscedasticity, that arise when the event windows are identical across observations. The portfolio time-series regression provides results with unbiased standard errors even if variables are missing in the cross-sectional regression. The following model is estimated over 250 sample days of [-125, 125]:

$$PODET_i = \alpha + \beta_1 MDRET_i + \beta_2 EVT + \varepsilon, \quad (3)$$

where $PODET_i$ is returns of the portfolio weighted by the information of audit business scale (*ABS*), and is estimated by the following steps. I construct an N×2 matrix (ONE_v, ABS_v), in which ONE_v is an N×1 vector of ones and ABS_v is an N×1 vector of *ABS*, where *ABS* is defined as *DNUM*, *DCLI*, *NUM*, and *CLI*, respectively. N is the number of sample firms that can be used to construct the portfolio. I then estimate the following equation:

$$(A'A)^{-1} A' = \left(\frac{W_{ONE}}{W_{ABS}}\right), \quad (4)$$

where A is the matrix constructed above, and W_{ABS} is the row of portfolio weights based on *ABS*. Last, $PODET_i$ is computed as the product of W_{ABS} and D_i, where D_i is an N×1 vector of the sample firms' daily returns with cash dividends reinvested. The number of sample firms in the portfolio time-series regression is higher than that of the cross-sectional regression, because there is no need to control for firm characteristics such as financial risk and corporate governance for 2000. But because the daily returns of each firm within [-125, 124] should be continuous, I delete sample firms of which the number of available daily return data is less than 240. I replace the remaining missing data by the market daily return (*MDRET*) and winsorise the firms' daily returns at the top and bottom 1 per cent; I then compute $PODET_i$.

EVT is a dummy variable for the disqualification event during the five-day period [-5, 5]. If perceived audit quality is positively related to audit business scale, β_2 should be positively significant. I also compute dummy variables *D(i)* for each day during [-5, 5] and conduct the single-day regression to achieve more statistical information. Table 4 demonstrates the results of Model 3; the results of single-day regressions are not reported except those of the significant (single-tailed) dummy variables (*D(i)*) for simplicity.

As Table 4 shows, *ABS* is significant at the 0.13 level when it is defined as *DNUM* and significant at the 0.08 level when it is defined as *CLI*. Moreover, it appears that ABSE is activated during the window [0, 5] in which some dummy variables are not significant. Taken together, the portfolio time-series regression provides evidence for ABSE, and the power of such evidence is much weaker than that of the cross-sectional regression.

Table 4 Portfolio Time-Series Regression

Basis of Portfolio	*DNUM*		*DCLI*		*NUM*		*CLI*	
	β	P	*β*	P	*β*	P	*β*	P
Intercept	0.0001	0.36	0.0000	0.53	0.0002	0.17	0.0001	0.33
MDRET	-0.0520***	0.00	-0.0018***	0.00	-0.0435***	0.00	-0.0285***	0.00
EVT	0.0009	0.13	0.0000	0.23	0.0005	0.51	0.0006*	0.08
Sample	250		250		250		250	
Adj R^2	0.2293		0.1960		0.0956		0.2254	
F Statistic	38.04***		31.36***		14.16***		37.24***	
Significant Days	*D(2), D(3), D(5)*		None		*D(2), D(3)*		*D(3), D(5)*	

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The single-day regression is $PODET_i = \alpha + \beta_1 MDRET_i + \beta_2 D(-5) + \beta_3 D(-4) + \beta_4 D(-3) + \beta_5 D(-2) + \beta_6 D(-1) + \beta_7 D(0) + \beta_8 D(1) + \beta_9 D(2) + \beta_{10} D(3) + \beta_{11} D(4) + \beta_{12} D(5) + \varepsilon$.
Variable Definitions: *MDRET* is the daily return weighted by tradable share values of the market with cash dividends reinvested. *EVT* is a dummy variable for the disqualification event during the five-day period [-5, 5]. *D(i)* is a dummy variable for day i during [-5, 5].

In the third test, I conduct a bootstrap regression, where the number of sampling times is 1000, to re-test Model 1. Bootstrap regression loosens the requirements of data distribution and provides more statistic information. As Table 5 shows, the significance of *ABS* is two-tailed in the Z tests of all four equations, indicating that the results of Table 2 are stable.

In the fourth test, I conduct a treatment effect regression to deal with the possible endogenous problems of the research model. It seems that auditor competence has a greater influence on audits of inventories and accounts receivable than auditor independence. But the impact of regulatory activities focuses on auditor independence. As a result, I use scales of inventory (*INV*) and accounts receivable (*AR*) as instrumentals in the selection model for *ABS*. Table 6 shows the results of a two-stage approach. From Table 6, *INV* is significant in the selection model for *ABS*. The significance of *ABS* is single-tailed when it is defined as *DNUM*, and two-tailed when it is defined as *DCLI*. The results provide additional evidence for ABSE. The results of the maximum likelihood estimation (MLE) approach are not shown for simplicity, since the significance of *ABS* is two-tailed in both regressions. I consider that the results of the treatment effect regression should be judged with caution, since it is hard to compute perfect instrumentals for audit research (Francis and Lennox, 2008). In fact, this event study suffers less from

endogenous problems, since it may cost firms much time to change their auditors, and the selection of CPA firms is usually stable under the impact of disqualification.

Table 5 Bootstrap Regression

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	β	P	*β*	P	*β*	P	*β*	P
Intercept	-0.0926	0.15	-0.0711	0.25	-0.1035	0.12	-0.2723***	0.01
ABS	0.0172***	0.01	0.0125*	0.08	0.0005**	0.01	0.0091**	0.01
SP	-0.0519***	0.00	-0.0518***	0.00	-0.0523***	0.00	-0.0529***	0.00
OP	0.0109	0.27	0.0124	0.21	0.0113	0.24	0.0114	0.24
LOSS	-0.0196	0.19	-0.0225	0.14	-0.0196	0.19	-0.0210	0.16
CURA	0.0005	0.84	0.0004	0.88	0.0004	0.87	0.0009	0.72
OCF	0.0928**	0.02	0.0901**	0.03	0.0956**	0.02	0.0933**	0.02
HER5	0.0408**	0.05	0.0397*	0.06	0.0394**	0.05	0.0359*	0.09
LIQ	0.0389	0.13	0.0373	0.14	0.0368	0.15	0.0351	0.17
INDEP	-0.0257	0.53	-0.0311	0.42	-0.0233	0.54	-0.0304	0.43
DE	0.0001	1.00	0.0023	0.92	-0.0012	0.96	0.0041	0.86
SIZE	0.0023	0.47	0.0014	0.65	0.0025	0.45	0.0005	0.88
Sample	592		592		592		592	
Adj R^2	0.0846		0.0774		0.0830		0.0846	
Wald χ^2	49.82***		37.30***		51.59***		44.91***	

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The model includes industry dummies not listed for simplicity.
Variable Definitions: All variables are as defined in Table 1.

Finally, I conduct some tests in which samples or variables are changed to check the sensitivity of the results of Model 1. Table 7 shows the statistical information of *ABS*.

In Test 1, I estimate ABSE in a shorter window [-2, 2] and find that the results are quite similar to those of Table 1, except that the significance of *ABS* is single-tailed when it is defined as *CLI*. In Test 2, I compute *ABS* based on audit data of 2000 and find that the P value of *DCLI* is greater than 0.2; however, the significance of *ABS* is two-tailed in the other three equations. In Tests 3 and 4, I test ABSE on full samples of which the observations with missing trade data or with a major event in the period [-5, 5] are not deleted, and on the minimum sample of which all auditor turnover firms are deleted. As Table 7 shows, the results are the same as those of Table 2.

Table 6 Treatment-Effect Regression

	Number of Clients				Size of Clients			
	DNUM 1st Regression		$CAR_{[-5, 5]}$ 2nd Regression		*DCLI* 1st Regression		$CAR_{[-5, 5]}$ 2nd Regression	
	β	P	β	P	β	P	β	P
ABS			0.0825	0.14			0.1535***	0.01
Intercept	-1.4390	0.41	-0.0919	0.21	-9.6441***	0.00	0.1750	0.20
SP	-0.0675	0.77	-0.0510***	0.00	-0.1374	0.60	-0.0480***	0.00
OP	0.3342	0.11	0.0061	0.54	-0.0314	0.90	0.0143	0.19
LOSS	-0.6927**	0.05	-0.0075	0.64	-0.0993	0.77	-0.0186	0.20
CURA			0.0003	0.92			0.0003	0.93
OCF			0.0925***	0.01			0.0911**	0.02
HER5	-0.8241	0.11	0.0516**	0.03	-0.9124	0.11	0.0605**	0.03
LIQ	-0.5521	0.38	0.0471*	0.09	-0.3758	0.58	0.0459	0.15
INDEP	0.6677	0.47	-0.0351	0.38	2.1933***	0.01	-0.1206**	0.04
DE	0.9018**	0.04	-0.0172	0.54	0.4626	0.33	-0.0130	0.64
SIZE	0.0262	0.76	0.0018	0.64	0.4100***	0.00	-0.0114	0.10
INV	1.0067*	0.06			0.8744	0.13		
AR	-0.7167	0.21			-0.2333	0.70		
Hazard								
Lambda			-0.0374	0.24			-0.0774***	0.02
Sample	592				592			
Wald χ^2	70.27***				82.91***			

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The model of *CAR[-5,5]* includes industry dummies not listed for simplicity.
Variable Definitions: *INV* is inventories divided by total assets. *AR* is accounts receivable divided by total assets. The remaining variables are as defined in Table 1.

Table 7 Sensitivity Tests

	ABS = DNUM		*ABS = DCLI*		*ABS = NUM*		*ABS = CLI*	
	β	P	β	P	β	P	β	P
Test 1: Use of $CAR_{[-2, 2]}$ as dependent variables								
ABS	0.0102***	0.00	0.0065*	0.10	0.0003**	0.02	0.0026	0.16
Test 2: Computation of *ABS* based on audit data of 2000								
ABS	0.0120*	0.08	0.0087	0.22	0.0004*	0.07	0.0071**	0.02
Test 3: Test with full sample, including sample with missing trade data and sample with a major event in the period [-5, 5].								
ABS	0.0130***	0.01	0.0133**	0.04	0.0004**	0.03	0.0071***	0.01
Test 4: Test with 567 samples in which all firms with a turnover of auditor in 2001 are deleted.								
ABS	0.0160***	0.01	0.0108	0.14	0.0005**	0.02	0.0085***	0.01

Note: *, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively. The model includes industry dummies not listed for simplicity.
Variable Definitions: All variables are as defined in Table 1.

V. Conclusions

According to the quasi-rent theory, the audit business scale is positively associated with the benefits of providing high quality audit services; the theory of pocket's depth draws the same conclusion (DeAngelo, 1981; Dye, 1993). On the basis of an event study of disqualification activities in China's audit market, this paper provides evidence that ABSE can be a result of regulatory activities, as the disqualification events demonstrate the relation between the audit business scale and the cost of opportunistic behaviour. In short, if opportunistic behaviour leads to a loss of all business, then large auditors with more business or bigger clients will have more incentive to commit to high quality services. The empirical results reveal the formation mechanisms of ABSE apart from the reputation and litigation systems. This paper also provides another piece of evidence regarding the positive economic consequences of regulatory activities in China. In addition, this research has implications for audit practices, such as the governance of adverse selection in the audit market. At last, the following limitations are worth noting: First, this research is designed based on perceived market indicators; the results may be affected by the market's capabilities in acquiring information on regulation. Moreover, it is hard to identify all potential economic explanations for the statistical results even using multiple variables in the tests. Second, care must be taken in drawing inferences from the results of the portfolio time-series regression, as the results are weaker than those of the cross-sectional regressions. Third, the research design does not directly cover all economic aspects, such as the interaction among auditors, management, and investors in the real audit market.

References

Please refer to pp. 74-75.